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Editorial

This special issue contains three papers selected among those presented during the Third International Conference on Similarity Search and Applications (SISAP), held in Istanbul, Turkey, in September, 2010. Fifteen regular and two invited papers were presented during the conference, together with two posters and six demos.

The selection of the papers included here was done by the Program Chairs considering the conference reviews and presentations, and this was filtered and confirmed by the whole Program Committee. Each paper was required to be significantly extended with respect to the conference version and to undergo additional reviewing rounds, performed by the same conference reviewers.

In the article "Indexability, concentration, and VC theory", Vladimir Pestov explores some geometric and complexity-theoretic aspects of the curse of dimensionality, studying how these affect indexing schemes. In particular, the Vapnik–Chervonenkis theory of statistical learning is exploited to derive lower bounds for the performance of metric indexing structures. Such contribution is likely to be the starting point for analyzing different aspects of the metric indexing problem, from exact indexing to probabilistic and approximate approaches.

In the second article, "Non-metric similarity search of tandem mass spectra including post-translational modifications", Jiří Novák, Tomáš Skopal, David Hoksza, and Jakub Lokoč apply metric indexing techniques to tandem mass spectrometry (MS/MS), a standard technology for detecting proteins in complex samples. In order to provide efficient and accurate similarity search, the authors exploit several state-of-the-art techniques, including TriGen and M-tree, proving the effectiveness of their approach on real-world data. Interestingly, this was one of two papers presented during the conference dealing with this issue, a fact that demonstrates the relevance of metric similarity search in this domain.

Finally, the article "Pivot selection: Dimension reduction for distance-based indexing", by Rui Mao, Willard Miranker, and Dan Miranker, introduces a novel technique for mapping the similarity search problem from a metric space to the $\Re^n$ space; then Principal Component Analysis (PCA) is exploited for dimension reduction on the (high-dimensional) resulting space. An additional contribution of this work is to show how PCA can be used to measure the intrinsic dimension of the original metric space, thus providing another interesting tool for the analysis of generic metric spaces.

We wish to thank the reviewers of these manuscripts for their committed and high-quality comments and suggestions. We are also grateful to the Editors of the Journal of Discrete Algorithms for the opportunity to present algorithmic aspects of similarity search to a wide audience. We sincerely hope this issue will be interesting enough to attract other researchers to this fascinating, although challenging, area. Finally, we thank people at JDA headquarters and at Elsevier for their hard work during the publishing process of this special issue.

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